

Chapter 53

470f

# **Honolulu High-Capacity Transit Corridor Project**

## **City and County of Honolulu, O'ahu, Hawai'i**

### **Final Environmental Impact Statement/Section 4(f) Evaluation**

Submitted pursuant to 49 USC 1601 et seq., 16 USC 470(f), 49 USC 303, 42 USC 4332(2)(c), 23 CFR 771, and Hawai'i Revised Statutes Chapter 343

*by the*

U.S. Department of Transportation Federal Transit Administration  
City and County of Honolulu Department of Transportation Services

*in cooperation with the*

U.S. Department of Defense (U.S. Army Garrison—Hawai'i)  
U.S. Department of Defense (U.S. Naval Base Pearl Harbor)  
U.S. Department of Transportation Federal Highway Administration  
State of Hawai'i Department of Transportation

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Date of Approval

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Regional Administrator  
U.S. Department of Transportation  
Federal Transit Administration

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Date of Approval

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Director, Department of Transportation Services  
City and County of Honolulu

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## Abstract

This Final Environmental Impact Statement/Section 4(f) Evaluation identifies the current and future need to address mobility and travel reliability issues, to support transportation and land use planning policies, and improve transportation equity in the corridor between Kapolei and the University of Hawai'i at Mānoa on the Island of O'ahu in the State of Hawai'i. In compliance with the National Environmental Policy Act, this document considers a No Build and a Build Alternative that will provide high-capacity transit service in the corridor between East Kapolei and Ala Moana Center. The alternative consists of 20 miles of elevated guideway, transit stations, park-and-ride facilities, a maintenance and storage facility, and other ancillary facilities to support the transit system. This document evaluates the transportation effects and potential consequences on the natural and human environment, including effects on land use and economic activity; communities and neighborhoods; visual and aesthetic conditions; air quality and energy; noise and vibration; hazardous materials; natural resources; water quality; and archaeological, cultural, and historic resources. Financial implications of construction and operation of the transit system are also evaluated. This document also includes a Final Section 4(f) Evaluation in compliance with the U.S. Department of Transportation Act of 1966.

A DVD of the Final EIS is available at no cost. The document is available on the project website at [honolulutransit.org](http://honolulutransit.org) and may be reviewed at the following locations:

- City and County of Honolulu Municipal Library
- All O'ahu public libraries
- City and County of Honolulu Department of Transportation Services, 650 South King Street, 3rd floor
- City and County of Honolulu Department of Transportation Services, Rapid Transit Division, 1099 Alakea Street, 17th floor

Printed copies of the document are available for purchase ~~at a cost~~

by contacting Mr. Wayne Yoshioka  
at 808 768 8303

Other Build Alternatives have been considered in the course of the environmental review and were eliminated for various reasons discussed herein.

The document commits to specific mitigation of adverse effects in accordance with

49 USC  
5324(b).

## State of Hawai'i Chapter 343 Final EIS Summary Sheet

<b>Description of Project</b>	The Project would provide high-capacity transit service on O'ahu in the travel corridor between Kapolei and the University of Hawai'i at Mānoa	
<b>Substantial Beneficial and Adverse Effects</b>	<ul style="list-style-type: none"><li>• Improve transit access, speed and reliability</li><li>• Improve access to planned development</li><li>• Increase travel options for transit dependent, limited income and aging populations</li><li>• Moderate future traffic congestion</li><li>• Reduce air pollutant emissions</li><li>• Reduce transportation energy use</li><li>• Loss of parking, turn lanes and bicycle lanes in some locations</li><li>• Right-of-way acquisition and displacement in some locations along the alignment</li><li>• Significant changes to views associated with an elevated guideway</li><li>• Noise impacts</li><li>• Prune, remove, and transplant street trees</li><li>• Adverse effects to historic and cultural resources</li><li>• Temporary adverse effects during construction for access, noise, and traffic</li></ul>	
<b>Committed Proposed Mitigation Measures</b>	<ul style="list-style-type: none"><li>• Incorporate new traffic management into design, replace some parking in lots</li><li>• Provide relocation assistance for displaced residents and businesses</li><li>• Minimize visual impacts with project design</li><li>• Noise mitigation, such as sound-absorptive materials</li><li>• Transplant or replant street trees</li><li>• Relocation assistance for cultural practices</li><li>• Measures to avoid, minimize, and mitigate harm to historic resources, such as Historic American Building Surveys</li></ul>	
<b>Alternatives Considered</b>	<ul style="list-style-type: none"><li>• No Build Alternative</li><li>• Airport Alternative</li></ul>	
<b>Unresolved Issues</b>	<ul style="list-style-type: none"><li>• Receipt of permits and approvals</li><li>• <del>Selection of the site of the maintenance and storage facility</del></li><li>• Receipt of Federal funds from Section 5309 New Starts program</li></ul>	
<b>Compatibility with Plans and Policies</b>	The Build Alternatives would be consistent with adopted State and Local government transportation and land use plans and policies.	
<b>Permits and Approvals</b>	<ul style="list-style-type: none"><li>• Archaeological Inventory Survey Plan</li><li>• Building Permit</li><li>• Certificate of Inclusion HDLNR (Division of Forestry and Wildlife)</li><li>• Clean Water Act Section 401, 402, and 404</li><li>• Coastal Zone Management</li><li>• Drainage Injection Control</li><li>• FAA Part 77</li><li>• Farmland Conversion Impact Rating</li><li>• Flood Hazard District Compliance</li><li>• Interstate Access Modification and Airspace Approvals</li></ul>	<ul style="list-style-type: none"><li>• National Pollutant Discharge Elimination System (General and Dewatering)</li><li>• Noise Permit and Variance</li><li>• Road Closure</li><li>• Runway Protection Zone Construction Waiver</li><li>• Section 10</li><li>• <del>Section 106 Memorandum of Agreement</del></li><li>• Sole Source Aquifer</li><li>• Special Management Area</li><li>• Stream Channel Alteration</li><li>• Stormwater Connection (MS4)</li></ul>

Date

Director, Department of Transportation Services  
City and County of Honolulu

*This document was prepared under my direction or supervision. The information, to the best of my knowledge, fully addresses document content requirements of HAR Section 11-200-17 and 11-200-18, as applicable.*

The HRS 343 EIS preparation notice was issued for this Project on December 8, 2005. The Notice of Intent to prepare an EIS was published in the *Federal Register* on March 15, 2007, which began the NEPA scoping period. The Draft EIS was distributed for public and agency review beginning in November 2008 with the Notice of Availability published in the *Federal Register* on November 21, 2008, and in the State of Hawai'i Environmental Notice on November 23, 2008. Public hearings were held to receive comments from the public and agencies, and comments were accepted until February 6, 2009. The Notice of Availability of this Final EIS <sup>will be</sup> published in the *Federal Register*. ~~of~~

This Final EIS identifies the Airport Alternative as the Preferred Alternative and responds to the comments received. No sooner than 30 days after publication of this Final EIS, the Governor of Hawai'i <sup>consider</sup> will accept the EIS and the FTA <sup>signing</sup> will sign a Record of Decision. The Record of Decision <sup>would</sup> summarize the alternatives considered, factors that support selection of the recommended alternative, and commitments to measures that mitigate <sup>substantial</sup> environmental impacts. <sup>adverse</sup> <sup>and community</sup>

Should any construction phase of this Project explicitly proceed without Federal funding, the mitigation measures contained in this document and the subsequent Record of Decision for that phase of the Project may not be enforceable by FTA. However, it is true that Congress seeks to foster in public transportation law the development and revitalization of public transportation systems that, among other goals, "minimize environmental impacts." Development and revitalization of public transportation systems is seen as including the minimization of environmental impacts as a shared responsibility among Federal, State, and Local governments and the people. The mitigation measures contained in this document would continue to be enforceable under Hawai'i state law.

The Honolulu High-Capacity Transit Corridor Project will provide high-capacity transit service in the travel corridor between Kapolei and UH Mānoa on O'ahu. This corridor includes the majority of housing and employment on O'ahu. The east-west length of the corridor is approximately 23 miles. The north-south width is at most 4 miles, because much of the corridor is constrained by the Ko'olau and Wai'anae Mountain Ranges to the north and the Pacific Ocean to the south. This document provides detailed environmental analysis and documentation for the 20-mile Project between East Kapolei and Ala Moana Center. Future planned extensions from East Kapolei to West Kapolei, following Salt Lake Boulevard, and from Ala Moana Center to UH Mānoa and to Waikīkī are included in the Locally Preferred Alternative selected by the City Council and addressed as cumulative effects in Sections 3.6.2 and 4.19.3 of this Final EIS.

These planned extensions would be evaluated through a separate NEPA and HRS 343 process and designed and constructed once additional funding is secured.

## Organization of the Final Environmental Impact Statement

This document is divided into two volumes. This volume contains the Final EIS, which consists of the following eight Chapters:

Chapter 1 discusses the Project's background, describes the study corridor from Kapolei to UH Mānoa and Waikīkī, and explains the Purpose and Need for the fixed guideway project.

Chapter 2 details the alternatives and technologies considered during the screening and selection process and summarizes the alternatives considered during the Alternatives Analysis and NEPA processes. It includes the basis for selection of

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is documented in the *Honolulu High-Capacity Transit Corridor Project Alternatives Screening Memorandum* (DTS 2006a).

The alternatives were screened through a series of steps, including gathering data, creating a comprehensive list of potential alternatives, developing screening criteria, and presenting viable alternatives to the public and interested public agencies and officials for comment during the Hawai'i Revised Statutes Chapter 343 (the State of Hawai'i's environmental impact statement law) preparation notice comment period and the Alternatives Analysis scoping process. Lastly, input from the scoping process was analyzed, and the alternatives were refined based on this input.

Once this evaluation was complete, the modal, technology, and alignment options were combined to create the following alternatives, which were evaluated and documented in the Alternatives Analysis Report: *which is incorporated herein by reference.*

- No Build Alternative
- Transportation System Management Alternative
- Managed Lane Alternative
  - Two-direction Option
  - Reversible Option
- Fixed Guideway Alternative
  - Kalaeloa-Salt Lake-North King-Hotel Option
  - Kamokila-Airport-Dillingham Option
  - Kalaeloa-Airport-Dillingham-Halekauwila Option

Chapter 2 of the Alternatives Analysis Report described these alternatives in detail, and Chapter 6 of that report compared them. After review of the Alternatives Analysis Report and consideration of public comments, the City Council selected a Locally Preferred Alternative that was signed into law by the Mayor, becoming Revised Ordinance of Honolulu (ROH) 07-001. This ordinance authorized the City to proceed with planning

and engineering of a fixed guideway project from Kapolei to UH Mānoa with an extension to Waikiki. The City Council also passed Resolution 07-039, which directed the first construction project to be fiscally constrained to anticipated funding sources and to extend from East Kapolei to Ala Moana Center via Salt Lake Boulevard.

During the NEPA scoping process, several scoping comments were received requesting reconsideration of the Managed Lane Alternative. This was considered and rejected during the Alternatives Analysis process. Because no new information was provided that would have substantially changed the findings of the Alternatives Analysis process regarding the Managed Lane Alternative, this alternative was not included in the Draft EIS.

In addition to suggestions to reconsider previously eliminated alternatives, three separate proposals were received and documented in the *Honolulu High-Capacity Transit Corridor Project National Environmental Policy Act Scoping Report* (DTS 2007). One proposal was to provide additional bus service with either school buses or private vehicles. The second was for a High-Speed Bus Alternative to include aspects of the Fixed Guideway Alternative and the Managed Lane Alternative (which was eliminated during the Alternatives Analysis process). These proposals were similar to alternatives that had already been considered and eliminated during the Alternatives Analysis process. Therefore, they were not considered in the Draft EIS. The third proposal was for an additional fixed guideway alternative serving the Honolulu International Airport. This alternative was included in the Draft EIS.

During the scoping process, comments were requested on five transit technologies. The comments received did not substantially differentiate any of the following five considered technologies as being universally preferable to the other technologies:

occur on roadways within the study corridor. This includes peak a.m. and p.m. congestion, especially in the peak direction (i.e., toward Downtown in the morning) and on existing high-occupancy vehicle (HOV) lanes.

These congestion-related delays increase travel times for the entire network; and increasing congestion and constrained operating conditions for public transit services have led to transportation conditions that are becoming less reliable. Although the bus system's productivity exceeds several systems that operate in larger metropolitan areas, gradually slower speeds, increased costs, and reduced service reliability have resulted from buses operating in mixed traffic. Even with the \$3 billion in planned roadway improvements outlined in the ORTP, congestion will increase, making it more difficult for bus transit to effectively serve the population.

Under the No Build Alternative, transit service would experience somewhat slower operating speeds and reduced reliability through the 2030 horizon year.

With the Project, overall transit speeds will increase, which will reduce travel times and improve operating efficiency as a result of the fixed guideway system. End-to-end travel time on the system will be 42 minutes. The Project will reduce travel time to major activity centers, such as Downtown and Ala Moana Center. For example, transit travel times from Kapolei to Downtown Honolulu in the a.m. peak would be 90 minutes in 2030 with the No Build Alternative and 55 minutes with the Project. Trips to and from Central O'ahu and Waikiki, while not directly served by the Project, also will benefit from reduced transit travel times. Total congestion will be reduced by 18 percent with the Project.

Transit service will be improved through local bus routes and pedestrian and bicycle access to guideway stations, resulting in an increased transit

share of total trips (particularly for work-related trips). A fixed guideway system will also improve transit equity by reducing travel times for transit-dependent populations to major employment areas.

With the Project, the fixed guideway will affect existing streets, parking capacity, and pedestrian and bicycles facilities. Effects of the Project will include reduced travel lane widths, parking, bicycle lanes, and sidewalks. Careful design and placement of guideway columns will minimize these potential effects. The Project will negatively affect traffic conditions at six intersections near the East Kapolei, UH West O'ahu, Pearl Highlands, and Ala Moana Center Stations. The Project will result in a loss of 105 on-street and approximately 785 off-street parking spaces. Traffic and parking effects will be mitigated. Construction of the Project will have temporary effects on the transportation system, and mitigation will include a Maintenance of Traffic Plan and Transit Mitigation Program.

### **Environmental Analysis, Consequences, and Mitigation**

The existing conditions, environmental effects of the No Build Alternative and the Project, and mitigation are evaluated in this Final EIS. All aspects of the natural and social environment were evaluated per NEPA and HRS 343 regulations. All ~~probable~~ adverse environmental effects and ~~proposed~~ mitigation measures are further summarized in Table 4-1 of this Final EIS. Efforts were made to avoid and minimize impacts to the natural and built environment. In many cases, impacts were avoided or minimized. Following is a summary of those resources where an impact is anticipated and mitigation commitments have been made by the City (Appendix I, Mitigation Comments).

#### **Displacements and Relocations**

Property acquisition of 191 parcels will be required. The Project will require 33 full acquisitions. Partial acquisitions will include 158 parcels.

*A more complete description of all mitigation commitments is found in the body of this FEIS.*

Noise during construction will be bothersome and annoying to nearby residents, visitors, and businesses. The Project will generate noise that will occur intermittently in different locations throughout the nine-year construction period.

Common sources of vibration during construction activities include jackhammers, pavement breakers, hoe rams, bulldozers, and backhoes. Pavement breaking and soil compaction will likely produce the highest levels of vibration. Depending on soil conditions in a given sub-area, activities such as pile driving can generate enough vibration to result in substantial short-term noise impacts. Various mitigation methods will be used to minimize noise and vibration impacts during construction.

Archaeological resources or native Hawaiian burials could be encountered during construction. The potential to encounter these resources will be reduced through pre-construction site investigations completed in coordination with the State Historic Preservation Division and the O'ahu Island Burial Council.

#### Section 4(f)

Section 4(f) of the U.S. Department of Transportation Act of 1966 (USC 1966b) protects public parklands, recreational lands, wildlife refuges, and historic sites of National, State, or Local significance from acquisition and conversion to transportation use. Because avoiding Section 4(f) resources was an important consideration, most public parks, recreational resources, and historic properties identified within the study corridor were avoided in designing the Project. However, the Project will result in the direct use of 11 Section 4(f) historic resources and 1 recreational resource; direct use ~~de minimis~~ of 2 Section 4(f) historic resources and 1 recreational resource, and temporary occupancy at 1 property. Considering the analysis of the Project's use of Section 4(f) resources, there is no feasible and prudent alternative to the use of these resources.

#### Cost and Financial Analysis

The capital cost of the Project, in fiscal year 2009 dollars, will be \$4.3 billion.

The local funding source for the Project is a dedicated 0.5-percent surcharge on the State of Hawai'i's General Excise and Use Tax (GET). This GET surcharge revenue is to be used exclusively for the Project's capital and/or operating expenditures and is expected to generate \$3.5 billion (year-of-expenditure dollars) through 2022. The FTA has agreed to consider \$1.6 billion (year-of-expenditure dollars) for the Federal contribution to the Project from the New Starts program.

The City receives Federal assistance through various funding programs from the FTA for ongoing capital investments to maintain and overhaul its transportation system. The financial analysis performed assumes the City will continue to receive these funds, some of which will increase noticeably after implementation of the Project.

#### Comments and Coordination

Agencies, non-governmental groups, and the public have been engaged throughout the project planning process, as required by Federal and State law. Public involvement efforts, including agency coordination and consultation, have been continuous throughout the Project, beginning with the Alternatives Analysis phase in December 2005 through the public comment period on the Draft EIS and during preparation of this Final EIS. In accordance with Executive Order 12898, particular attention has been paid to reaching low-income and minority populations, which are traditionally underserved and underrepresented in the public involvement process.

As part of the NEPA and HRS 343 process, the Draft EIS was circulated for a 75-day review and comment period starting in November 2008. Formal public hearings were held during

*with de minimis impacts*

like a horizontal elevator, was eliminated based on lack of technical maturity and low capacity. Emerging rail concepts were eliminated because they have never been proven in real-world use and would not meet the rapid implementation schedule for the project.

Corridor-wide at-grade light-rail transit was rejected because it would have required conversion of traffic lanes to rail throughout the corridor, thereby substantially reducing roadway capacity since no abandoned or undeveloped alignments are available in the study corridor. At-grade light-rail would have required either the acquisition and removal of buildings throughout the corridor or the conversion of two or more traffic lanes. Acquisition of right-of-way and the associated displacements would be required for stations in any event.

An at-grade system would not have provided a reliable, high-capacity, exclusive right-of-way system. Short blocks in the downtown area would limit the length of trains to two vehicles, and coordination of signals would limit headways to three minutes. This would prevent any future expansion of capacity. Average speed would be approximately one-half of that of an exclusive right-of-way system. Any automobiles that block the tracks, either at intersections or by trespass onto the tracks, as well as accidents that affect the tracks, would delay the transit system. This would not occur with an exclusive right-of-way system.

In addition, electrically powered trains are quieter than buses and because they come every few minutes rather than constantly, as does traffic, pedestrians and motorists are often unaware of their approach. The potential for accidents with at-grade light rail is substantially greater than it is with a separated right-of-way system. Excavation to a depth of between 4 and 5 feet would be required for the entire length of the at-grade system to construct track support. As a result, the potential for disturbance to archaeological resources or

burials would be much greater than it would be for an elevated system.

For the Fixed Guideway Alternative screening analysis, the corridor was divided into geographic sections. Within each section, the alignments retained for evaluation in the Alternatives Analysis phase were those that demonstrated the best performance related to mobility and accessibility, smart growth and economic development, constructability and cost, community and environmental quality, and consistency with adopted plans. In total, 75 fixed guideway alignment options were screened (DTS 2006a).

### 2.2.2 Alternatives Considered in the Alternatives Analysis

Once the screening evaluations were completed, the modal, technology, and alignment options were combined to create the following alternatives, which were evaluated and documented in the *Alternatives Analysis Report* (DTS 2006b):

- No Build Alternative
- Transportation System Management (TSM) Alternative
- Managed Lane Alternative
  - Two-direction Option
  - Reversible Option
- Fixed Guideway Alternative
  - Kalaeloa-Salt Lake-North King-Hotel Option
  - Kamokila-Airport-Dillingham Option
  - Kalaeloa-Airport-Dillingham-Halekauwila Option

*which is incorporated herein by reference:*

These alternatives were evaluated based on their effectiveness in meeting the Project's goals and objectives related to mobility and accessibility, supporting planned growth and economic development, constructability and cost, community and environmental quality, and planning consistency. All four alternatives were evaluated to the same set of criteria. This Final EIS summarizes the individual criteria for each alternative that differentiated



- *Honolulu High-Capacity Transit Corridor Project Addendum 01 to the Noise and Vibration Technical Report* (RTD 2009a)
- *Honolulu High-Capacity Transit Corridor Project Wetland and Waters of the U.S. Study* (RTD 2009b)
- *Honolulu High-Capacity Transit Corridor Project Addendum 01 to the Historic Resources Technical Report* (RTD 2009c)
- *Honolulu High-Capacity Transit Corridor Project Historic Effects Report* (RTD 2009d)
- *Honolulu High-Capacity Transit Corridor Project Addendum 01 to the Cultural Resources Technical Report* (RTD 2009e)
- *Honolulu High-Capacity Transit Corridor Project Ecosystem Function and Values of Wetland and Waters of the U.S.* (RTD 2009h)

The analyses demonstrated that the Project will not have an adverse effect upon geology, soils, or natural hazards; therefore, they are not addressed in this chapter. The Project will be designed to meet seismic and other design standards related to natural hazards, such as wind forces from tropical storms. The project alignment is outside the tsunami evacuation zones.

Geographic areas are discussed in four categories, as appropriate to the resource:

- **Project Region**—the entire Island of O‘ahu (Figure 1-1 in Chapter 1, Background)
- **Study Corridor**—the southern coast of O‘ahu where the Project is located (Figure 4-1)
- **Project Station Area**—areas within one-half mile of a project station (Figure 4-1); one-half mile is generally considered an acceptable walking distance
- **Project Alignment**—the route of the fixed guideway (Figure 4-1); discussions involving the project alignment include those properties adjacent to the alignment (i.e., properties fronting the roadway along which the guideway will be built)

Table 4-1 summarizes the environmental effects of the Project; mitigation measures to avoid, minimize, or reduce the effects; and probable unavoidable adverse effects that are detailed in this chapter.

- The City and County of Honolulu (City) will incorporate mitigation measures required by permits, approvals, and agreements into the Project during final design and construction. During construction, the City will employ an environmental compliance manager to oversee and enforce mitigation commitments.

While the Project will be environmentally preferable regarding air quality, energy use, and water quality, the No Build Alternative is the environmentally preferable alternative based on overall consideration of the criteria listed in 40 CFR 1505.2(b). The No Build Alternative would directly affect fewer historic and cultural resources, waters of the U.S., have no direct visual impact, and cause no displacements. However, the No Build Alternative does not meet the Purpose and Need for the Project.

#### 4.1 Changes to this Chapter since the Draft Environmental Impact Statement

This chapter has been updated to reflect the identification of the Airport Alternative as the Project. It includes updated analyses of the effects of the Project on the natural and built environments as compared to the No Build Alternative. Table 4-1 includes updated mitigation commitments for the Project and identifies probable unavoidable adverse environmental effects.

Since publication of the Draft EIS, design has been advanced, further analysis has been completed, and information has been added in response to comments on the Draft EIS and agency coordination since the publication of the Draft EIS. The sections in Chapter 4 have been renumbered and

**Table 4-1 Summary of Direct Environmental Effects and Mitigation Measures to Avoid, Minimize, or Reduce Impacts**  
(continued on next page)

<b>Land Use, Section 4.2</b>	
Environmental Effects	Approximately 160 acres of existing land use will be converted to transportation use. Included are 88 acres of prime and statewide-important farmlands. This is less than one-tenth of one percent of available agricultural land on O'ahu. The Project is consistent with future land use plans and policies.  The land needed for the Project represents approximately 1 percent of the total acreage within the study corridor. A majority of the land uses being converted to a transportation use represent business uses (approximately 84 percent), which include retail, office, industrial, and agricultural. The remaining 16 percent of land conversions will be from residential land uses.
Mitigation Measures	Based on the relatively small amount of land that will be acquired, including farmland, no mitigation is required.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Economic Activity, Section 4.3</b>	
Environmental Effects	For the Project, property will be acquired from private owners and converted to a transportation use that will be owned by the City. This will result in a direct reduction in annual property tax revenues. These reductions are estimated to be \$1.2 million annually for the Project. The Project is not expected to result in substantial long-term adverse effects on property tax revenues.
Mitigation Measures	No mitigation is required.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Acquisitions, Displacements, and Relocations, Section 4.4</b>	
Environmental Effects	Acquisitions: 33 full, 158 partial Displacements: 20 residences, 61 businesses, 1 church
Mitigation Measures	Where acquisition of property will occur, compensation will be provided to affected property owners, businesses, or residents in compliance with all applicable Federal and State laws and will follow the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Community Services and Facilities, Section 4.5</b>	
Environmental Effects	There will be impacts to schools, libraries, churches, parks, and recreation facilities adjacent to the alignment that are detailed below. There will be partial acquisition or use of land at 14 community facilities and displacement of 1 church. The Project will not affect the operation of the community facilities where partial acquisition is required, and the church will receive relocation assistance.  A number of properties owned by utility providers will be affected by partial acquisitions, and some utilities will be relocated and/or modified to accommodate the Project.
Mitigation Measures	Buildings, parking, lighting, fencing, and other features will be replaced or compensation will be provided.  Where acquisition of property will occur, compensation will be provided to affected property owners in accordance with all applicable Federal and State laws and will follow the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.

*The project is consistent with official land use plans and policies, so the Section 106 PA sets forth procedures for minimizing adverse effects on historic areas.*

**Table 4-1 Summary of Direct Environmental Effects and Mitigation Measures to Avoid, Minimize, or Reduce Impacts**  
(continued on next page)

Probable Unavoidable Adverse Environmental Effects	Although mitigation measures will minimize many adverse visual effects by providing visual buffers and reducing visual contrasts between the project elements and their surroundings, the Final EIS acknowledges, as concluded in the Draft EIS, that <del>probable</del> unavoidable adverse effects, such as view blockage, cannot be mitigated and will be significant (noted as a "high" level of visual impact in the Draft EIS) in some areas.
<b>Air Quality, Section 4.9</b>	
Environmental Effects	The Project will reduce regional pollutant emissions between 3.9 to 4.6 percent.  The study area is in attainment for all national ambient air-quality standards.  The Project will reduce emissions of greenhouse gases.
Mitigation Measures	Because no substantial air quality impacts are anticipated, no mitigation will be required.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Noise and Vibration, Section 4.10</b>	
Environmental Effects	The Project would have moderate noise impacts at the following locations: 94-340 Pupumomi Street, 5th floor and above; 860 Halekauwila, moderate impact to 6th floor and above; 1133 Waimanu, moderate impact to 5th through 9th floors. A 3-foot parapet wall is included in Project design.  There will be no vibration impacts.
Mitigation Measures	Wheel skirts and sound-absorptive materials will be added within the guideway structure in the vicinity of anticipated impacts.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Energy and Electric and Magnetic Fields, Section 4.11</b>	
Environmental Effects	The Project will reduce daily transportation energy demand by 3 percent. Electric and magnetic fields from the Project could affect one electron microscope.  Motor vehicle consumption islandwide: 90,756 MBTUs.  Fixed guideway energy consumption: 1,690 MBTUs.
Mitigation Measures	None required.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Hazardous Waste and Materials, Section 4.12</b>	
Environmental Effects	Sites of concern near the Project could be contaminated. Sites where hazardous materials are or have been used or stored will be acquired. <i>has performed</i>  The City <del>will perform</del> a Phase I Environmental Site Assessment for properties that will be acquired for the Project. Depending on the outcome, a Phase II Environmental Site Assessment may be appropriate. The City will decide the necessity of the Environmental Site Assessment for each property acquisition.
Mitigation Measures	Properties identified as contaminated will be remediated in accordance with regulations.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.

*Phase II*

*, in consultation with the State,*

**Table 4-1** Summary of Direct Environmental Effects and Mitigation Measures to Avoid, Minimize, or Reduce Impacts  
(continued from previous page)

<b>Ecosystems, Section 4.13</b>	
Environmental Effects	There will be “no effect” to threatened, endangered, or protected species or designated critical habitats.
Mitigation Measures	The City will secure a Certificate of Inclusion from the Hawai‘i Department of Transportation for Ko‘oloa‘ula ( <i>Abutilon menziesii</i> ) and will comply with the measures identified in the Habitat Conservation Plan.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Water, Section 4.14</b>	
Environmental Effects	There will be effects to five streams from construction of guideway support columns below OHWM, which will affect a maximum of 0.02 acre of waters of the U.S. (linear transportation features) and 0.06 acre of other project features. Effects to wetlands will include shading from the guideway. There will be no adverse effects to marine waters, groundwater, or floodplains.
Mitigation Measures	Permanent mitigation features <del>are proposed and</del> include enhancement of the stream, establishment of wetlands, ecological restoration with native Hawaiian plantings, extension of existing culvert, and enhancement of floodway capacity conveyance to achieve zero rise in flood zone. Where the Project crosses an estuary reach and placement of columns cannot be avoided, the columns will align with existing columns.
Probable Unavoidable Adverse Environmental Effects	No unavoidable adverse environmental effects are anticipated.
<b>Street Trees, Section 4.15</b>	
Environmental Effects	Tree removal will be minimized to the greatest extent possible, but pruning is likely next to the guideway. Twenty-eight “Notable” true kamani trees along Dillingham Boulevard will be removed. Approximately 100 street trees will be pruned, 550 will be removed, and 300 will be transplanted.
Mitigation Measures	Mitigation measures will consist of transplanting existing trees or planting new ones. Pruning will be in compliance with City and County ordinances and require supervision by a certified arborist. The City will coordinate with HDOT’s landscape architect.
Probable Unavoidable Adverse Environmental Effects	Street trees will be removed in areas where they are not compatible with the Project.
<b>Archaeological, Cultural, and Historic Resources, Section 4.16</b>	
Environmental Effects	There will be adverse effects to 33 historic resources and effects to 5 cultural resources.
Mitigation Measures	Mitigation measures for historic resources affected by the Project have been developed in consultation with the Section 106 consulting parties. A Programmatic Agreement has been executed for the Project that details mitigation for adverse effects to resources eligible for the National Register of Historic Places.
Probable Unavoidable Adverse Environmental Effects	While mitigation will be provided for all adverse effects, the Project will still require demolition of three historic buildings.

property needed would be for the Ho'opili maintenance and storage facility. The preferred site for the maintenance and storage facility is, however, the former Navy fuel storage and delivery facility near Leeward Community College. If the Project can acquire this site, about 47 acres of agricultural land designated prime or of statewide importance will be acquired for the Project.

The City coordinated with the Hawai'i State Office of the NRCS, pursuant to the Farmland Protection Policy Act (USC 1981). As shown on the NRCS-CPA-106 Form for the Project, the total of points is below the established threshold (Appendix F, Record of Agency Correspondence and Coordination).

The 2002 *Census of Agriculture* (USDA 2004) reported that there are more than 70,000 acres of agricultural land in cultivation on O'ahu, including those designated as prime, unique, or of statewide importance. The displacement of agricultural lands as a result of the Project represents less than one-tenth of one percent of available agricultural land. Considering that the amount of affected farmland is such a small proportion of all agricultural lands on O'ahu, including those designated as prime, unique, or of statewide importance, the effect will not be substantial and no mitigation will be required.

#### **Future Land Use Plans and Policies**

##### **No Build Alternative**

Under the No Build Alternative, a transit system would not be constructed. However, this is not consistent with transportation and land use components in planning documents that support the development of a central transit system within the study corridor. Future projects on the ORTP are assumed to be constructed, and separate environmental documents will be prepared for those projects.

#### **Project**

The Project is consistent with the transportation and land use elements of adopted State and Local government plans. The transit system will link Honolulu with outlying developing areas and activity centers that have been designated to receive increasing amounts of future residential and employment growth. The system will provide reliable rapid transit within the study corridor that will serve all population groups, improve transit links, and offer an alternative to the use of private automobiles.

#### **Mitigation**

Based on the relatively small number of parcels affected by full acquisitions, the effects on different types of land uses in the study corridor will be minimal. No mitigation measures will be needed.

*(Summarize PA requirements for dealing w/ Project-induced LU changes in historic areas.)*

### **4.3 Economic Activity**

This section describes the effect of the Project on regional economics in the study corridor. Existing and future employment and growth in the study corridor were considered in the analysis. In addition, the anticipated changes to property tax revenues that will result from acquisition of property for the Project were evaluated. Economic effects related to construction are discussed in Section 4.18, and the Project's financial analysis is presented in Chapter 6, Cost and Financial Analysis. For additional information and references, see the *Honolulu High-Capacity Transit Corridor Project Economics Technical Report* (RTD 2008c).

#### **4.3.1 Background and Methodology**

##### **Regulatory Context**

Regulations applicable to this analysis are as follows:

- Definition of Real Property Tax Rates—Real Property Tax Rate Tables, City of Honolulu, Department of Budget and Fiscal Services, Real Property Assessment Division